

CLAIMS

1. An apparatus for continuous casting of metal ingots, comprising:

- (a) a feed trough for carrying molten metal;
- 5 (b) at least one casting mould for casting metal ingots;
- (c) a connecting trough separately connecting each said casting mould to the feed trough for transferring molten metal;
- 10 (d) a shutoff gate associated with each connecting trough and located adjacent the feed trough, said gate being movable between an open position and a closed position; and
- (e) each connecting trough including a drop-down
- 15 portion located between the shutoff gate and the casting mould, said drop-down portion being adapted to swing downwardly and thereby rapidly drain molten metal from the connecting trough and an entrance of the mould.

20

2. The apparatus of claim 1 wherein the drop-down portion of the connecting trough is pivotably mounted on one end thereof.

3. The apparatus of claim 2 wherein the shut-off gate is

25 biased closed and further comprises an actuator for holding the gate in an open position.

4. The apparatus of claim 1 further comprising:

- (a) an annular channel formed in the casting mould
- 30 having a coolant inlet to the channel and at least

one opening for delivering coolant from the annular channel to a surface of the ingot during casting; and

(b) a gas supply line connected to the annular channel for periodic injection of gas to clear the at least one opening of coolant or molten metal.

5. The apparatus of claim 1 wherein the feed trough is a heated trough.

6. The apparatus of claim 1 wherein the at least one connecting trough is a heated trough.

7. The apparatus of claim 1 further comprising a conveying device, positioned adjacent the mould and aligned in the direction of casting of the ingot, for conveying the ingot from the casting mould.

8. An apparatus for continuous casting of metal ingots, comprising:

- (a) a trough for carrying molten metal;
- (b) a casting mould for receiving molten metal, and casting the metal into metal ingots;
- (c) a source of coolant positioned to impinge upon a surface of the ingot to cool said ingot;
- (d) a conveying device aligned in the direction of casting of the ingot, for conveying the cast ingot from the casting mould;
- (e) an elongated starter block, adapted to be inserted into the mould and supported by the conveying device and having a threaded recess formed therein

for receiving molten metal; and

- (f) an O-ring fitted to the starter block for sealing the block against the casting mould.

5 9. The apparatus of claim 8 wherein the starter block has a concave annular depression on an outer face thereof adjacent the mould adapted to deflect coolant away from the O-ring.

10 10. The apparatus of claim 8 wherein the starter block further comprises an air vent, formed in the threaded recess and leading to an adjacent surface of the starter block, to allow venting of air from the recess as it receives molten metal.

15 11. The apparatus of claim 10 further comprising a porous plug placed in the threaded recess adjacent the air vent to hold molten metal in the recess while allowing venting of air from the recess.

20 12. An apparatus for continuous casting of metal ingots, comprising:

- (a) a feed trough for conveying molten metal;
 - (b) at least one casting mould for casting metal ingots;
 - (c) a connecting trough separately connecting each said casting mould to the feed trough for transferring molten metal;
 - (d) a shutoff gate associated with each connecting trough and located adjacent the reservoir, said gate being movable between an open position and a closed position;
- 30

(e) each connecting trough including a drop-down portion located between the shutoff gate and the casing mould, said drop-down portion being adapted to swing downwardly and thereby rapidly drain molten metal from the connecting trough and an entrance of the mould;

(f) a conveying device associated with each casting mould aligned in the direction of casting of the ingot, for conveying the cast ingot from the casting mould;

(g) a elongated starter block, adapted to be inserted into the mould and supported by the conveying device and having a threaded recess formed therein for receiving molten metal; and

(h) an O-ring fitted to the starter block for sealing the block against the casting mould.

13. A method of stopping casting of at least one strand in a multi-strand continuous molten metal caster for casting ingots, having a feed trough for carrying molten metal, at least one casting mould for casting metal ingots, a connecting trough separately connecting each said casting mould to the feed trough for transferring molten metal, a shutoff gate associated with each connecting trough and located adjacent the reservoir, said gate being movable between an open position and a closed position, each connecting trough, including a drop-down portion located between the shutoff gate and the casing mould, said drop-down portion being adapted to swing downwardly, the method comprising:

a. closing the shutoff gate to isolate said at least one strand from the feed trough; and

b. swinging the drop down portion downwardly to rapidly drain molten metal from the connecting trough and an entrance of the mould.

5 14. The method of claim 13 further comprising, between closing the shutoff gate and swinging the drop down portion downwardly, accelerating the rate of extracting of the ingot from the mould.

10 15. The method of claim 13 wherein the casting mould is provided with an annular channel having a coolant inlet and at least one opening for delivering coolant to a surface of the ingot during casting, and an air supply line and air supply valve connected to the annular channel for clearing the at
15 least one opening of coolant or molten metal,

the method comprising shutting off the coolant inlet and injecting a gas from the air supply line through the at least one opening, to clear the opening, after swinging the drop-down portion downwardly.